

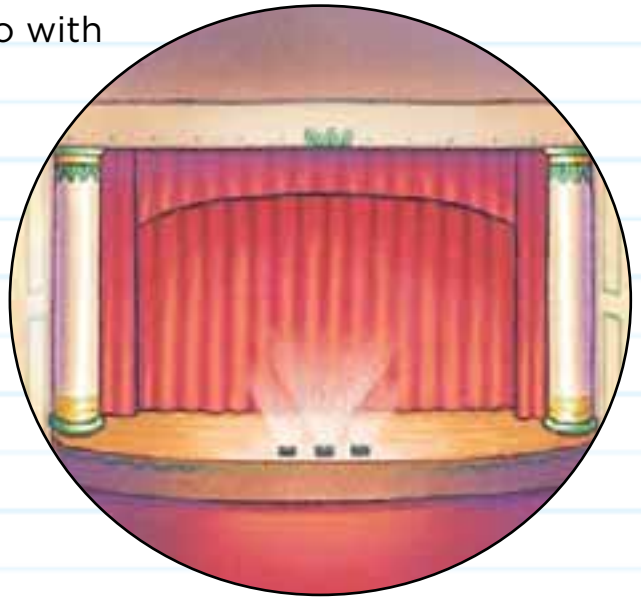
VISIT...

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Your Turn

Write a play so that you can practice using dialogue.

Choose a theme that has something to do with food. Plan to use strong characters with unique personalities. Make sure that the words you choose for each character fit that character's personality. Remember that the best way to show conflict between characters is through what they say to each other. Use the writer's checklist to check your writing.



Writer's Checklist

- ☒ **Ideas and Content:** Did I choose a theme about food that interests me?
- ☒ **Organization:** Does the conversation among the characters flow easily from person to person?
- ☒ **Voice:** Did I choose words for each character that those characters would really use when speaking?
- ☐ **Word Choice:** Did I choose precise words that help to reinforce the **mood**?
- ☒ **Sentence Fluency:** Do the sentences in the dialogue among characters flow smoothly?
- ☒ **Conventions:** Did I punctuate my play properly?
Did I check spelling?

Talk About It

What can people gain by learning about nature?



Find out more about studying nature at www.macmillanmh.com

Learning from Nature



Vocabulary

instill

combined

naturalist

vacant

diverse

Paul Cox collects a vine from high up in a banyan tree in Samoa.

The Healing Power of Plants

Even as a kid in Utah, Paul Cox was wild about plants. He built a greenhouse and collected weird, insect-eating plants.

Cox studied to become an ethnobotanist (eth•no•BOT•uh•nist). This, he explains, “is someone who loves plants and people and studies the relationship between them.” Cox is most interested in how to use plants for healing.

When he won an important science award, Cox decided to use the money to “go live with native healers to learn from them.” He, his wife, and their

four kids moved to a remote village in Samoa, an island nation in the South Pacific. They lived for a year in a hut without running water or electricity.

Cox studied how the people of Samoa use plants to treat illness. One tree he learned about from a native healer could someday be used to make a valuable drug. If so, “the [native healer’s] whole village will share the riches,” says Cox. The leafy kingdom of plants is full of such treasures. Cox’s work and the knowledge of native healers may ultimately lead to medicines that save many lives.



All the earthkeepers pitched in to help build an outdoor seating area and nature trails.

Teaching "EARTHKEEPING"

For more than 27 years, Joseph Andrews has tried to **instill** a love of nature in his students. "I try to tie nature into every subject," he explains. Andrews teaches a **combined** fourth- and fifth-grade class at Jones Lane Elementary School in Gaithersburg, Maryland.

One year his students helped build an outdoor classroom for the school. There students can enjoy a view of a meadow and stream while they learn. Language arts, social studies, and Earth science all come to life in the outdoor classroom. Sometimes the students read poetry and Native American tales. At other times they simply listen to the sounds of nature and hope to catch a glimpse of the deer and foxes that make their homes near the school.

"Mr. Andrews calls us his earthkeepers," says fifth-grader Emmanuel Maru. Andrews says giving students that title helps them understand that they have an important role in helping to protect the environment.

THE "BIODIVERSITY" MAN

Edward Osborne Wilson was a **naturalist** from the start. As a child growing up in Alabama and northern Florida, he loved to study nature. He made his first important scientific discovery when he was 13. In a **vacant** lot in Mobile, Alabama, he found the first known U.S. colonies of fire ants. Starting as an entomologist—a scientist who studies insects—E.O. Wilson went on to become one of the most respected scientists in the world. He is most well known for making the world aware of the importance of biodiversity. "Bio" means "life." "Diversity" comes from the word "**diverse**," which means "different from one another." Biodiversity describes the complex web of life, with many different plant and animal species, that is necessary to keep Earth healthy.



Find out more about biodiversity at
www.macmillanmh.com

Comprehension

Genre

A **Nonfiction Article** in a newspaper or magazine presents facts and information about real people, places, and events.



Make Inferences and Analyze

Cause and Effect

A cause is what makes something happen. An effect is the thing that happens.

A Historic Journey

How did the leaders of the Lewis and Clark expedition make history as both explorers and scientists?

IN 1803, President Thomas Jefferson asked Captain Meriwether Lewis to explore a huge area of North America known as the Louisiana Purchase. The United States was about to buy this land from France. The effect of this purchase was to double the size of the United States territory, but very little was known about it. Jefferson hoped it included a water route between the Mississippi River and the Pacific Ocean that would help U.S. trade.

Besides learning about the geography of the Louisiana Purchase, Lewis was ordered to report on the people, plants, and animals that inhabited this vast territory.



**Meriwether
Lewis**

**Lewis and Clark's westward
route, 1804-1805**



**William
Clark**



Accompanying Lewis on this adventure was Captain William Clark, Lewis's best friend. During their historic journey, each of these two army captains would prove to be an excellent **naturalist**. They kept superb maps and diaries of everything they saw and learned. They were the first to write about many Native American tribes who lived in the territory. Their **combined** efforts produced descriptions of the **diverse** plant and animal life in the territory—122 kinds of animals and 178 kinds of plants.

Barking Squirrels or Ground Rats?

The expedition started in May 1804. Lewis and Clark led a 33-member team out of St. Louis, Missouri. That September, the team set eyes on an endless sea of little animals that French members of the team called *petite chiens*—French for “little dogs.” Plans for future travel were halted until these creatures could be thoroughly investigated. Lewis called them “barking squirrels.” Clark preferred to call them “ground rats.” The name we now know—“prairie dogs”—came later. The team even captured a live prairie dog and sent it back to President Jefferson in Washington.



Prairie dog

William Clark's diagram of the Handsom Falls on the Missouri River



Where Do the Buffalo Roam?

The Missouri River from St. Louis to what is now North Dakota was already well-traveled by trappers and traders. But Lewis and Clark collected a trove of new plant and animal specimens from the area. They also created a detailed map of the route.

The farther north Lewis and Clark and their team traveled in the summer of 1804, the more buffalo they saw. By fall, however, the immense herds were starting to move south toward their wintering grounds. A few months later, feasts of fresh buffalo were just pleasant memories. Thankfully, the explorers enjoyed the hospitality of two Native American tribes, the Mandan and Hidatsa. Mule deer replaced buffalo as a source of meat for the explorers.

In 1805 the expedition paddled northwest on the Missouri River toward Montana. There Lewis and Clark found less open prairie. The land was broken up by shallow gullies and streams. It was dotted

with bushes and scrubby trees. The rugged landscape of western North Dakota amazed and challenged the expedition. They crossed the Badlands—a harsh, nearly **vacant** area of rolling hills and little vegetation—and moved onto the plains. Here the explorers spotted wondrous sights. Meriwether Lewis wrote this in his journal on September 16, 1805: “. . . vast herds of buffalo, deer, elk, and antelopes were seen feeding in every direction as far as the eye of the observer could reach.”

Keeping Track While Making Tracks

More than 500 days and 4,000 miles after they had set out, Lewis and Clark reached the Pacific. Clark—who was a horrible speller—wrote in his journal “Ocian view! O! the joy!”

Lewis and Clark never found the water route that Jefferson hoped they would, but they became the first U.S. citizens to explore the Midwest and West—the endless Great Plains, the jagged Rocky Mountains, and the glittering Pacific. They took the time to write down in their journals everything they saw each day.

Perhaps the greatest effect of the Lewis and Clark expedition was the opening of U.S. territory west of the Mississippi River to other explorers and to settlers. Thanks to the courage, endurance, and keen observation skills of Lewis and Clark, we can look back today and see the land as it was then. The record of their journey helps to **instill** in Americans today the same sense of wonder and adventure they must have felt more than two hundred years ago.

Think and Compare



1. What caused Jefferson to send Lewis and Clark on their expedition?
2. According to this selection, what was the most important result of the Lewis and Clark expedition?
3. Do you think you would have liked to have been part of the Lewis and Clark expedition? Why or why not?
4. What common theme can you find among all of these selections? What are the individuals in each selection interested in?

Lewis and Clark camped near here in what is now Montana. The Rocky Mountains are in the distance.





Test Strategy

On My Own

The answer is not in the selection. Form an opinion about what you read.



Model of a morphing-wing plane

Like birds, airplanes have wings and tails that are necessary for flight. It seems natural that the design of airplanes would be inspired by the bodies of birds. Engineers are still trying to make airplanes do as many things in flight as birds can do.

Just spend a little time on a beach watching seagulls, and you'll recognize the challenge. A seagull swoops over the sand, suddenly changes direction, pauses in midair, drops earthward, lands, and takes off again—all in just a few seconds. An airplane can't do that. Scientists don't yet understand how birds are able to make certain kinds of movements in the air.

Understanding how birds perform their aerial feats is one step in the effort to improve the design of aircraft.

DESIGNED by NATURE

The hope is to make aircraft more efficient and maneuverable—able to change direction easily. Someday this research may produce an airplane with wings that are dramatically different from the wings we see today. Another possibility: airplane wings that can actually morph, or change shape, in flight.



The design of this 1928 airplane was based on an owl in flight.

Directions: Answer the questions.

1. Engineers who design airplanes are inspired by birds because

- A** migrating birds can sometimes interfere with air travel.
- B** they want to build airplanes that make similar movements.
- C** they want to find a way to keep birds away from certain areas.
- D** they want to design sturdier wings for aircraft.

2. Among the things a seagull can do that an airplane can't do are

- A** fly fast and carry cargo.
- B** raise and lower landing gear in flight.
- C** take off and land on a runway.
- D** pause in midair and change direction suddenly.

3. Someday airplanes may have wings that can

- A** flap like the wings of birds.
- B** change color in flight.
- C** change shape in flight.
- D** move up and down in flight.

4. What new uses can you think of for airplanes that have wings like birds?

5. Airplanes have changed over the years, from ones with simple, box-shaped wings to supersonic jets. How important is flight today? Should airplanes continue to change? Explain your answer.

Tip

Form an opinion.

Write to a Prompt

The selection “The Healing Power of Plants” tells about ethnobotanist Paul Cox, who studies how native healers use plants as medicines. Should modern doctors be required to learn about methods used by native healers? Write a one-page persuasive essay giving your opinion on this question.



I used facts and reasons to support my argument.

We Know Better

I do not believe modern doctors should have to learn about methods used by native healers. The reason is simple: Now we know better.

We have made so many advances in medicine that native healers really don't have anything valuable to teach us. They don't have the benefit of high-tech machines. Modern doctors do. Native healers don't have college classes to learn chemistry and biology. Doctors who have taken those classes are already way ahead of native healers.

Native healers may know how to use plants to make a person feel better. But doctors don't need plants when the best, most effective medicines are available to them and their patients.

Doctors prescribe medicines that have been tested by the government. How would we know if a medicine made from plants by a native healer is safe? That's the strongest argument of all to stick with modern medicine. It's as simple as this: We know better.

Writing Prompt

“Teaching Earthkeeping” is about Joseph Andrews, a teacher who tries to instill a love of nature in his students. Do you believe schools should spend money and time instilling a love of nature in students? Write a one-page persuasive essay giving your point of view on this question.

Writer's Checklist

- ✓ Ask yourself, who is my audience?
- ✓ Think about your purpose for writing.
- ✓ Choose the correct form for your writing.
- ✓ Form an opinion about the topic.
- ✓ Use reasons to support your opinion.
- ✓ Be sure your ideas are logical and organized.
- ✓ Use your best spelling, grammar, and punctuation.